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THE STATUS OF *PSEUDORHABDOSYNOCHUS* YAMAGUTI, 1958, AND *CYCLOPLECTANUM* OLIVER, 1968 (MONOGENEA: DIPLECTANIDAE)

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Abstract.—*Cycloplectanum* Oliver, 1968, is considered a junior subjective synonym of *Pseudorhabdosynochus* Yamaguti, 1958. *Diplectanum epinepheli* Yamaguti, 1938, *P. epinepheli* Yamaguti, 1958, and *C. hongkongensis* Beverley-Burton and Suriano, 1981, are synonyms, resulting in the valid name of the species being *P. epinepheli* (Yamaguti, 1938) new combination.

During our independent investigations on diplectanids from fishes in the Neotropics (DCK) and in the Pacific and Caribbean (MB-B), it became apparent that a problem exists concerning the status of the genera *Pseudorhabdosynochus* Yamaguti, 1958, and *Cycloplectanum* Oliver, 1968. In this paper, we present a historical review of these taxa and offer a solution to the systematic problem.

Yamaguti (1958) established *Pseudorhabdosynochus* for *P. epinepheli* Yamaguti, 1958, from the gills of *Epinephelus akaara* (Temm. and Schleg.) collected from the Inland Sea of Japan. The genus was characterized, in part, by the presence of squamodiscs reduced to membranous plaques with several curved, transverse ridges. Oliver (1968) proposed *Cycloplectanum* for diplectanids in which the two interior rows of rods on the squamodiscs formed closed circles. He designated *Diplectanum americanum* Price, 1937, as the type-species, of which *D. epinepheli* Yamaguti, 1938, *D. serrani* Yamaguti, 1953, *D. amplidiscatum* Bravo-Hollis, 1954, *D. latesi* Tripathi, 1957, *D. melanesiensis* Laird, 1958, and *Pseudorhabdosynochus epinepheli* Yamaguti, 1958, were considered junior synonyms. Beverley-Burton and Suriano (1981) emended *Cycloplectanum* on the basis of morphologic characteristics of the terminal genitalia (i.e., copulatory complex and vagina). These authors did not accept Oliver's (1968) synonymies of species, but considered all six taxa listed to be distinct. Recognizing that their arrangement would result in homonymy between the then congeneric *epinepheli* (Yamaguti, 1938) and *epinepheli* (Yamaguti, 1958), Beverley-Burton and Suriano (1981) proposed *C. yamagutii* to replace the latter.

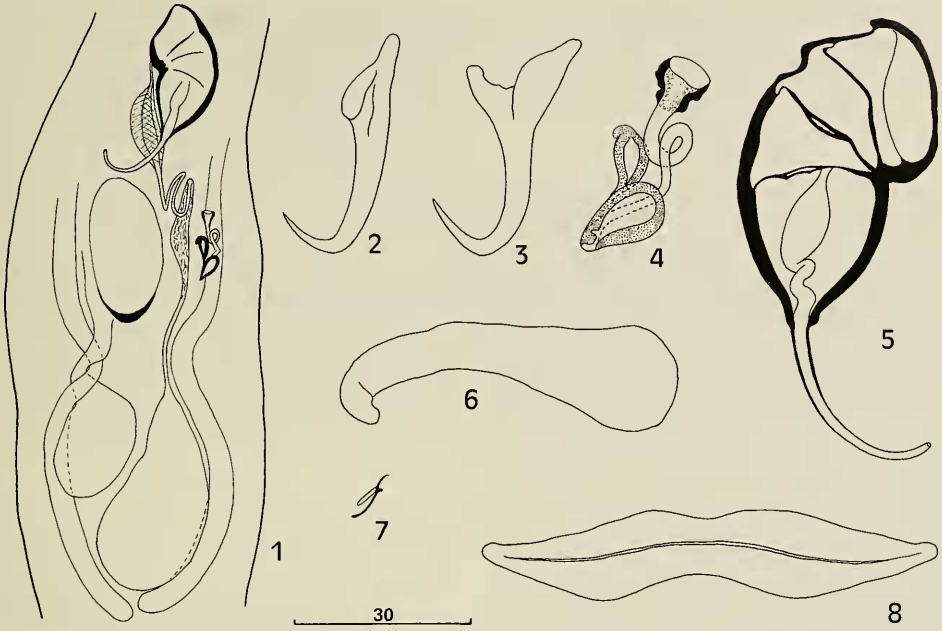
It is evident that the proposals of Oliver (1968) concerning *Pseudorhabdosynochus epinepheli* and the establishment of *Cycloplectanum* are based on incorrect interpretations of the International Code of Zoological Nomenclature (ICZN). His determination that *P. epinepheli* was a junior synonym of *Diplectanum americanum* does not invalidate the status of the former as the name-bearing type of *Pseudorhabdosynochus* (Art. 61, ICZN). Thus, *Cycloplectanum* is a subjective junior synonym of *Pseudorhabdosynochus* since the taxon contains two type-species (*P. epinepheli* and *D. americanum*) with *Pseudorhabdosynochus* having priority. As long as *D. americanum* and *P. epinepheli* are congeneric, *Cycloplectanum* must be suppressed (Art. 23, ICZN).

Based on the most recent revision of *Cycloplectanum* by Beverley-Burton and Suriano (1981), *Pseudorhabdosynochus* (= *Cycloplectanum*) currently contains the species listed in Table 1. From Yamaguti's (1958)

Table 1.—Pseudorhabdosynochus species and their synonyms.

Species	Synonyms
Pseudorhabdosynochus epinepheli (Yamaguti, 1938) (senior subjective synonym of the type species, *P. epinepheli* Yamaguti, 1958)	*Diplectanum epinepheli* Yamaguti, 1938 *Pseudorhabosynochus epinepheli* Yamaguti, 1958 (type species) *Cycloplectanum hongkongensis* Beverley-Burton and Suriano, 1981 *C. americanum* (Price, 1937) Oliver, 1968 (partim) *C. yamagutii* Beverley-Burton and Suriano, 1981
P. americanum (Price, 1937)	*D. americanum* Price, 1937 *C. americanum* (Price, 1937) Oliver, 1968 (partim)
P. amplidiscatum (Bravo-Hollis, 1954)	*D. amplidiscatum* Bravo-Hollis, 1954 *C. amplidiscatum* (Bravo-Hollis, 1954) Beverley-Burton and Suriano, 1981 *C. americanum* (Price, 1937) Oliver, 1968 (partim)
P. beverleyburtonae (Oliver, 1984)	*C. beverleyburtonae* Oliver, 1984 *C. americanum* (Price, 1937) Oliver, 1968 (misidentification) *D. americanum* Price, 1937 of Euzet and Oliver (1965) (misidentification)
P. bocquetae (Oliver and Paperna, 1984)	*C. boquetae* Oliver and Paperna, 1984
P. caballeroi (Oliver, 1984)	*C. caballeroi* Oliver, 1984 *C. americanum* (Price, 1937) Oliver, 1968 (partim) *D. americanum* Price, 1937 of Caballero and Bravo-Hollis (1961) (misidentification)
P. cupatum (Young, 1969)	*D. cupatum* Young, 1969 *C. cupatum* (Young, 1969) Beverley-Burton and Suriano, 1981
P. lantauensis (Beverley-Burton and Suriano, 1981)	*C. lantauensis* Beverley-Burton and Suriano, 1981
P. latesi (Tripathi, 1955)	*D. latesi* Tripathi, 1955 *C. latesi* (Tripathi, 1955) Beverley-Burton and Suriano, 1981 *C. americanum* (Price, 1937) Oliver, 1968 (partim)
P. melanesiensis (Laird, 1958)	*D. melanesiensis* Laird, 1958 *C. melanesiensis* (Laird, 1958) Beverley-Burton and Suriano, 1981 *C. americanum* (Price, 1937) Oliver, 1968 (partim)
P. querni (Yamaguti, 1968)	*D. querni* Yamaguti, 1968 *C. querni* (Yamaguti, 1968) Beverley-Burton and Suriano, 1981
P. serrani (Yamaguti, 1953)	*D. serrani* Yamaguti, 1953 *C. serrani* (Yamaguti, 1953) Beverley-Burton and Suriano, 1981
P. summanae (Young, 1969)	*D. summanae* Young, 1969 *C. summanae* (Young, 1969) Beverley-Burton and Suriano, 1981
P. vagampullum (Young, 1969)	*D. vagampullum* Young, 1969 *C. vagampullum* (Young, 1969) Beverley-Burton and Suriano, 1981

description of the internal anatomy and structure of the squamodisc of *P. epinepheli,* it might be argued that this species is not congeneric with others included in the table. Relevant to this is that Yamaguti (1958) indicated an intercecal ovary which does not loop the right intestinal crus. *Pseudorhabdosynochus epinepheli* was also considered to have unarmed squamodiscs which distinguished it, at that time, from other known species of Diplectanidae. However, our study of the holotype and paratype of *P. epinepheli* Yamaguti, 1958 (Meguro Parasitological Museum No. 22375) under No-



Figs. 1–8. *Pseudorhabdosynochus epinepheli* (Yamaguti, 1938). 1, Diagram of median region of body (ventral); 2, Ventral anchor; 3, Dorsal anchor; 4, Vagina (ventral); 5, Cirrus; 6, Dorsal bar; 7, Hook; 8, Ventral bar. All figures are drawn to the same scale (30 micrometers) except Figure 1.

marksi (direct interference contrast) illumination confirmed that the ovary does loop the right intestinal crus as it does in all other species of the complex (Fig. 1). While both the holotype and paratype lack scaled squamodiscs, this feature also is not sufficient to exclude *P. epinepheli* from the complex since squamodisc scales are easily lost if fixation does not occur immediately after death of the diplectanid.

Confusion concerning the valid name of the type-species of *Pseudorhabdosynochus* also exists. Originally indicated by monotypy, the species, *P. epinepheli* Yamaguti, 1958, has undergone name changes (to *C. americanum* by Oliver, 1968, and to *C. yamagutii* by Beverley-Burton and Suriano, 1981) as a result of the proposal and subsequent revision of *Cycloplectanum.* Now, our examination of holotypes and paratypes of *Diplectanum epinepheli* Yamaguti, 1938 (Meguro Parasitological Museum No. 22259), *P. epinepheli* Yamaguti, 1958 (Meguro Parasitological Museum No. 22375) and *C. hongkongensis* Beverley-Burton and Suriano, 1981 (USNM Helm. Coll. Nos. 76720, 76726, 76727) has revealed that all of these forms are conspecific. The type-series of *Diplectanum epinepheli* includes specimens which have squamodiscs partially or completely lacking scales, and sclerites of the haptor and terminal genitalia are indistinguishable from those of *P. epinepheli.* Thus, since the three species listed above are herein considered conspecific, the senior available name (i.e., valid name, Art. 23a, ICZN) for this taxon is *P. epinepheli* (Yamaguti, 1938).

In his descriptions of *D. epinepheli* and *P. epinepheli,* Yamaguti (1938, 1958) did not provide detailed drawings of the sclerites of the haptor and genitalia. Those presented herein (Figs. 2–8) are based on the holotype and paratype of *P. epinepheli* Ya-

maguti, 1958, the specimens on which *Pseudorhabdosynochus* was originally proposed.

Discussion

Blackwelder (1967:503–505) has shown that the 1961 ICZN was not clear regarding the definition of what the type of a genus is, i.e., a species (a taxon) or a species name, although the preface (page v) to this edition of the Code clearly indicates the former. However, the Glossary of the 1985 edition of the ICZN expresses that a type-species is a nominal species, a nomenclatural concept having no defined taxonomic boundaries. Although many authors (taxonomists) have apparently believed that the type of a genus is a species rather than a species name, the definitions provided by the 1985 Code clearly indicate that the type of a generic taxon is a name. Thus, the type, designated by monotypy, of *Pseudorhabdosynochus* remains *P. epinepheli* Yamaguti, 1958, which is a junior subjective synonym of *P. epinepheli* (Yamaguti, 1938) n. comb.

The nominal genus, *Cycloplectanum* Oliver, 1968, while a junior subjective synonym of *Pseudorhabdosynochus,* satisfies all criteria of the Code (Arts. 10–20) and is therefore an available name. If at some later revision of the species group, *americanum* and *epinepheli* are determined not to be congeneric, *Cycloplectanum* is available for the group containing *americanum.*

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